



# **Ecological Conditions Update**

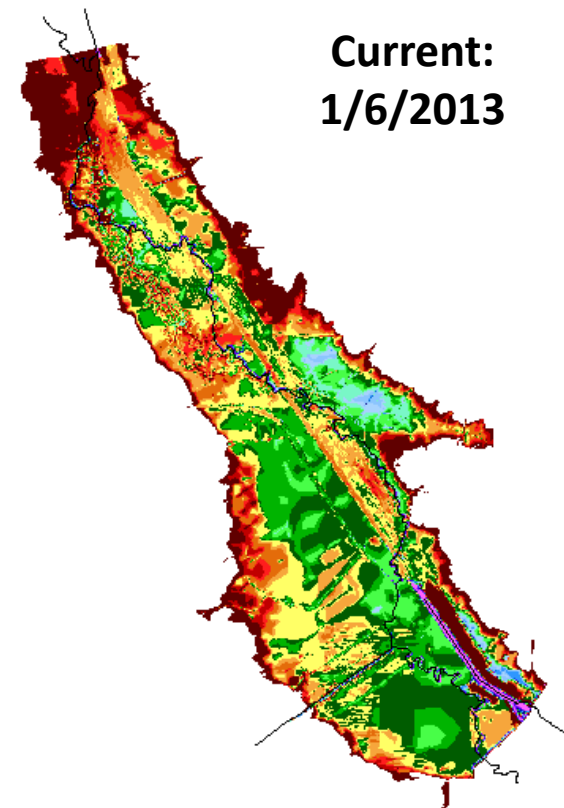
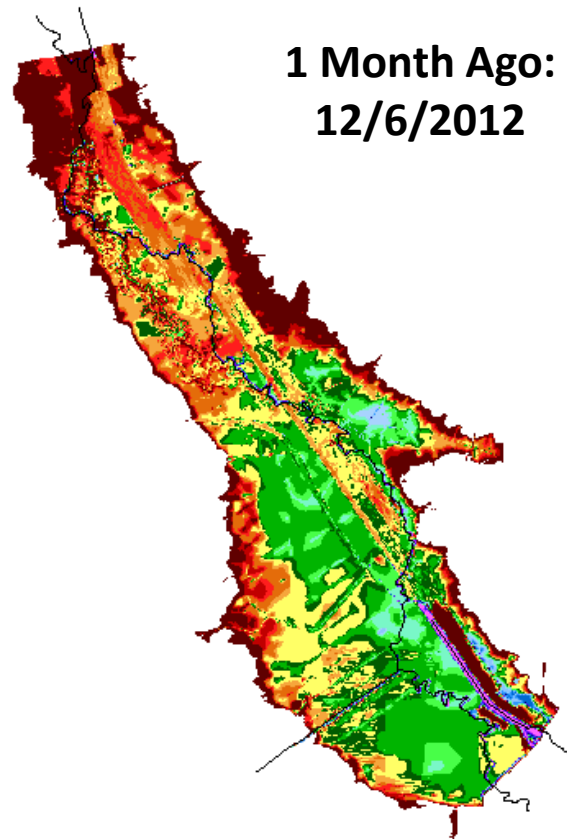
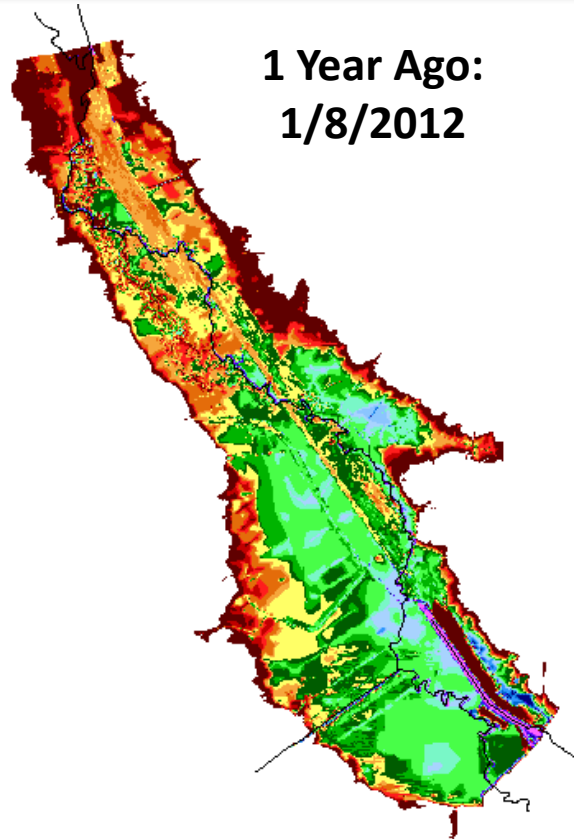
**January 2013**

**Terrie Bates**  
Director, Water Resources Division

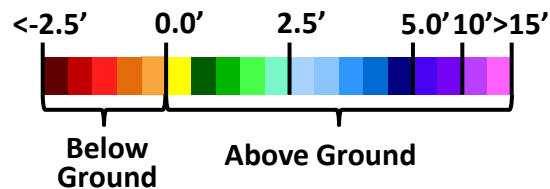
**Governing Board Meeting**  
**January 10, 2013**

# Kissimmee River (Pool C)

## Monthly Water Depth Maps



Water Depth (feet)





# Drying Floodplain

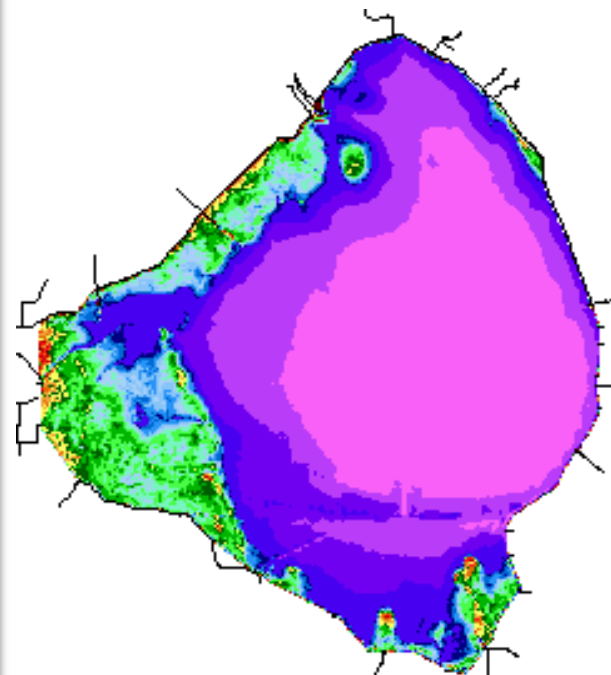


# Lake Okeechobee Water Depth Timeseries Maps

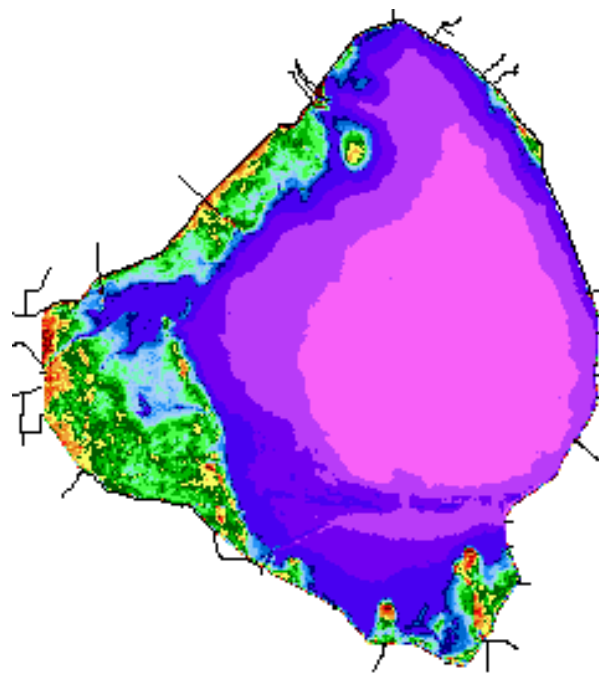
1 Year Ago: 1/8/2012

1 Month Ago: 12/8/2012

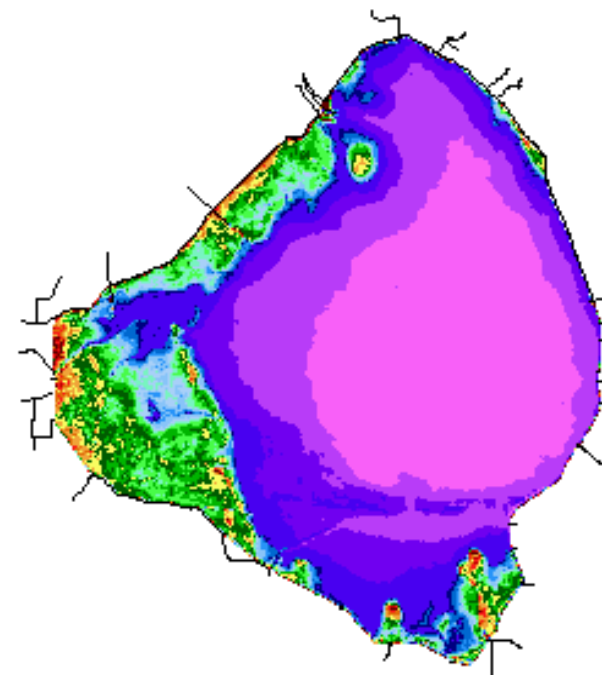
Current: 1/8/2013



(13.53 ft NGVD29)



(15.03 ft NGVD29)

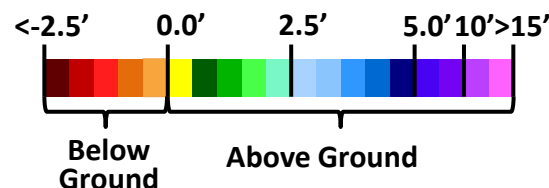


(15.01 ft NGVD29)

Lowest lake stage this year:  
11.56 ft NGVD29 (05/14/12)

Record low lake stage:  
8.82 ft NGVD29 (7/2/07)

Water Depth (feet)





# Lake Okeechobee

## Wading Bird Foraging

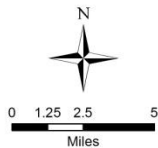
### Wading Bird Foraging Locations

December 12, 2012

Average Stage: 15.16 NGVD  
Number of Foraging Birds\*: 3,791

Water Depth in Feet (NGVD29)

- Too Wet ( $> 1.64'$ )
- Long-legged ( $0.66' - 1.64'$ )
- Short and long-legged ( $0' - 0.66'$ )
- Some Ponding
- Too Dry ( $< 0.00'$ )
- Foraging Flocks



\* Number of foraging birds is an estimation and does not account for observer bias

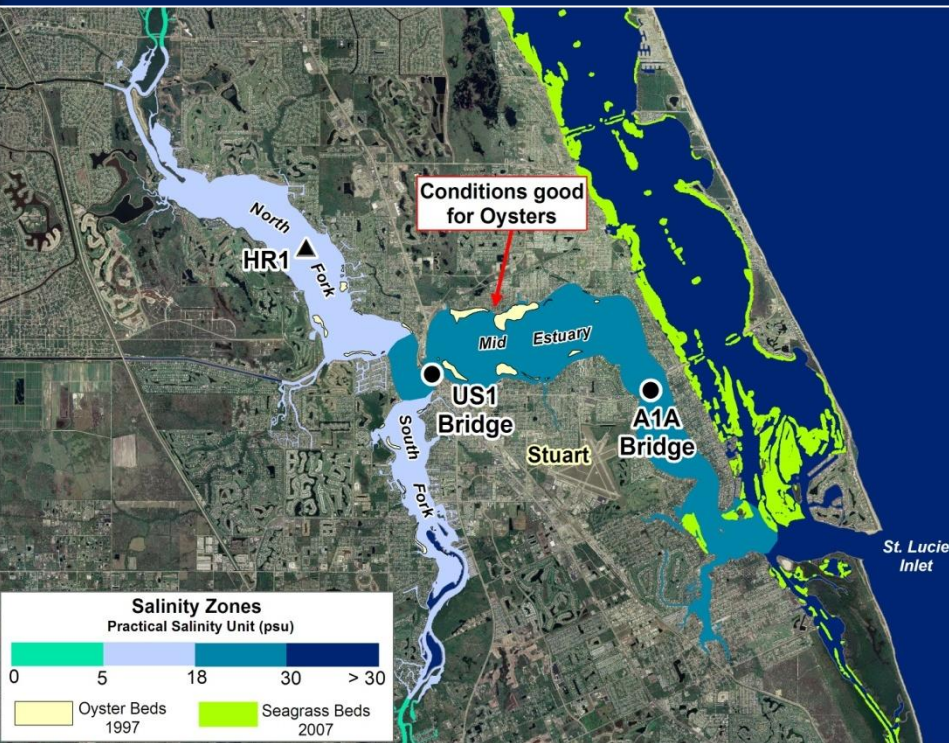




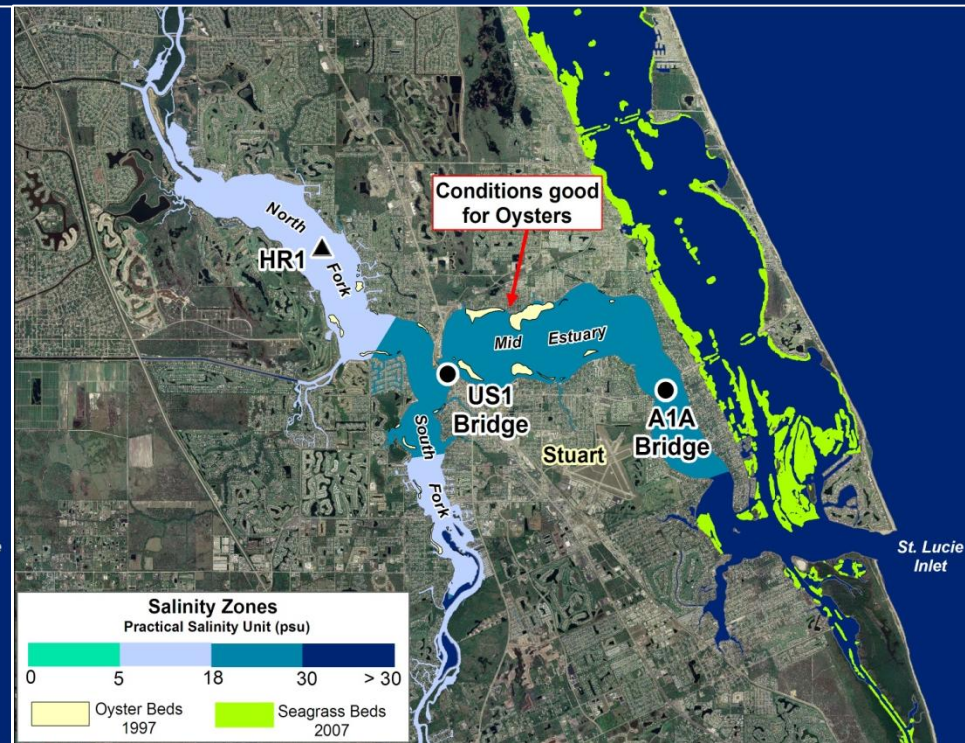
# St. Lucie Estuary

## Salinity Conditions

December 10, 2012



January 7, 2013



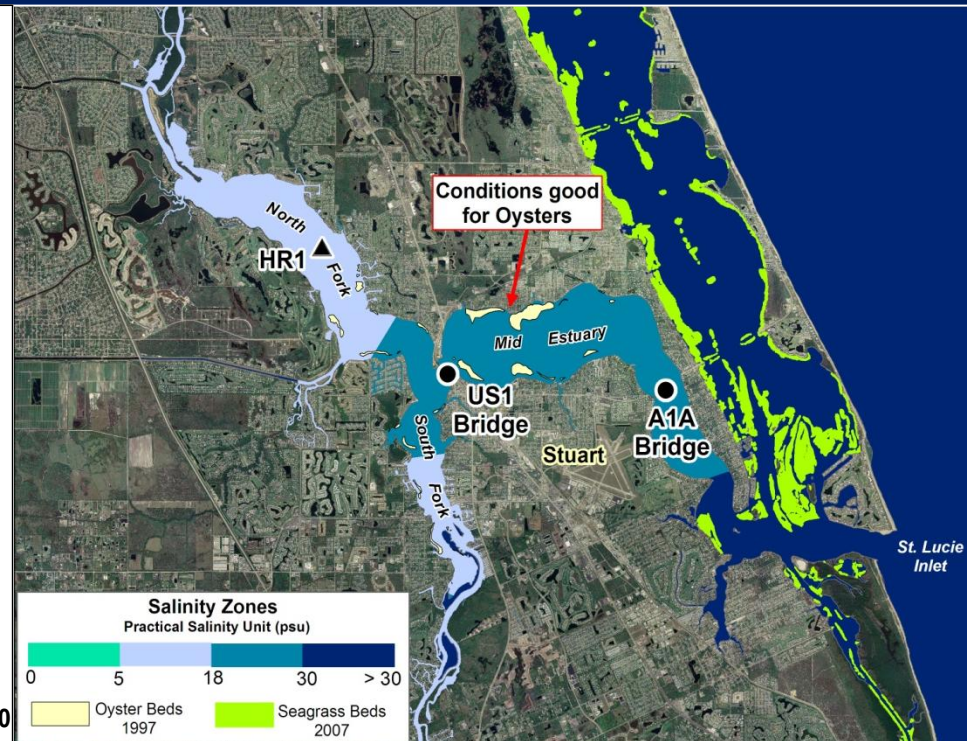
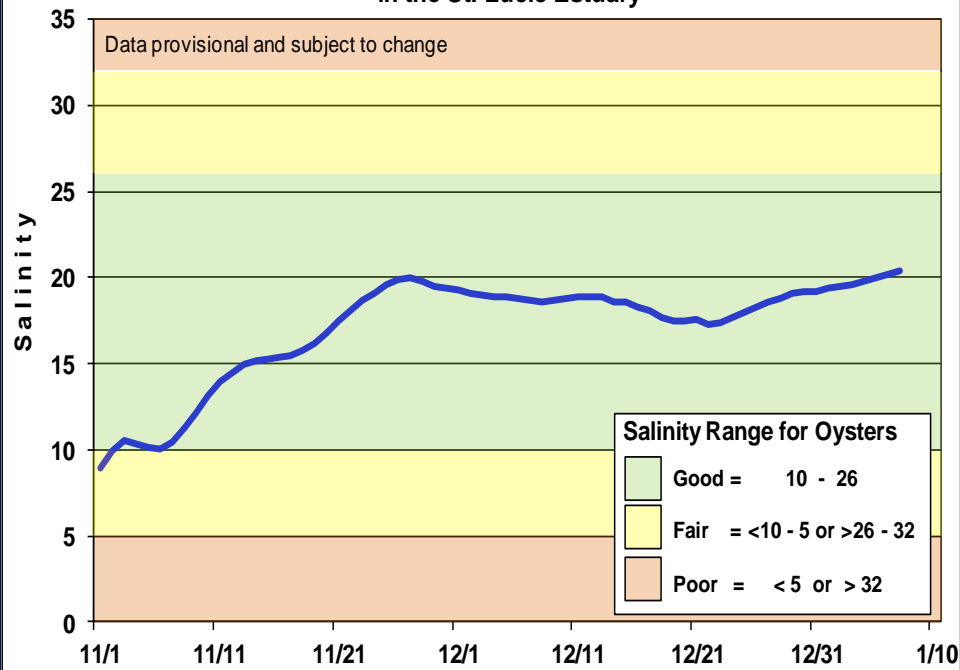


# St. Lucie Estuary

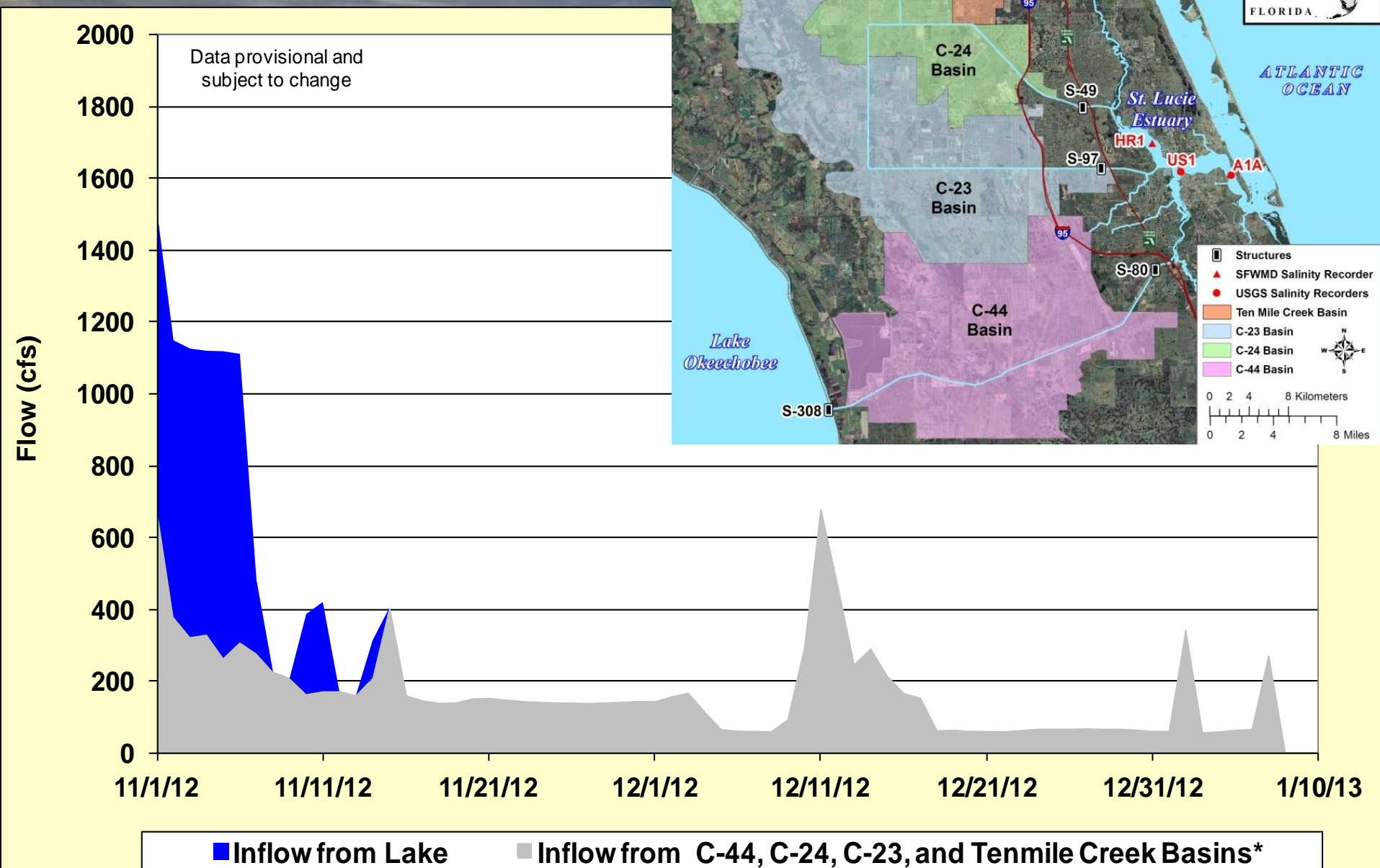
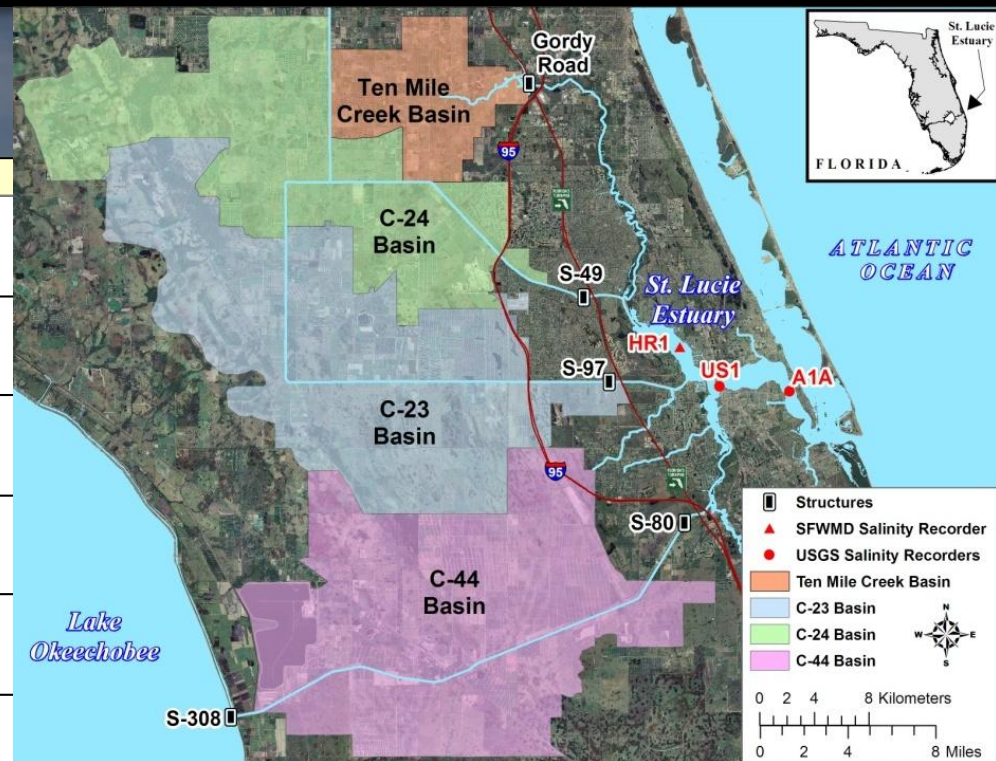
## Salinity Conditions

January 7, 2013

Seven day mean salinity of the water column at US1 Bridge in the St. Lucie Estuary



# St. Lucie Estuary



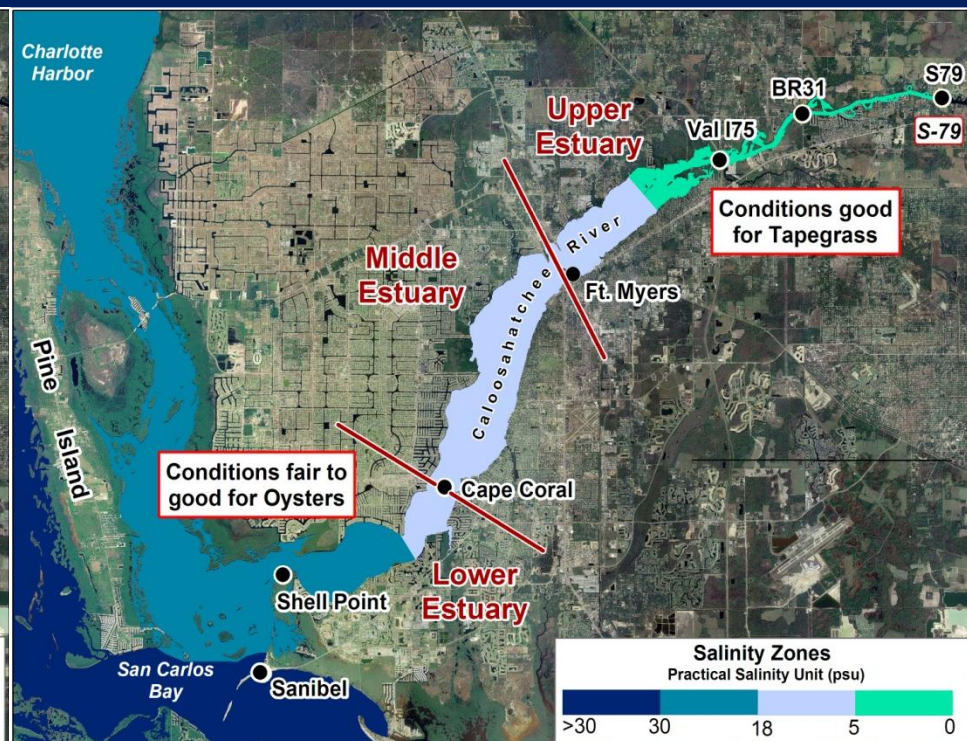
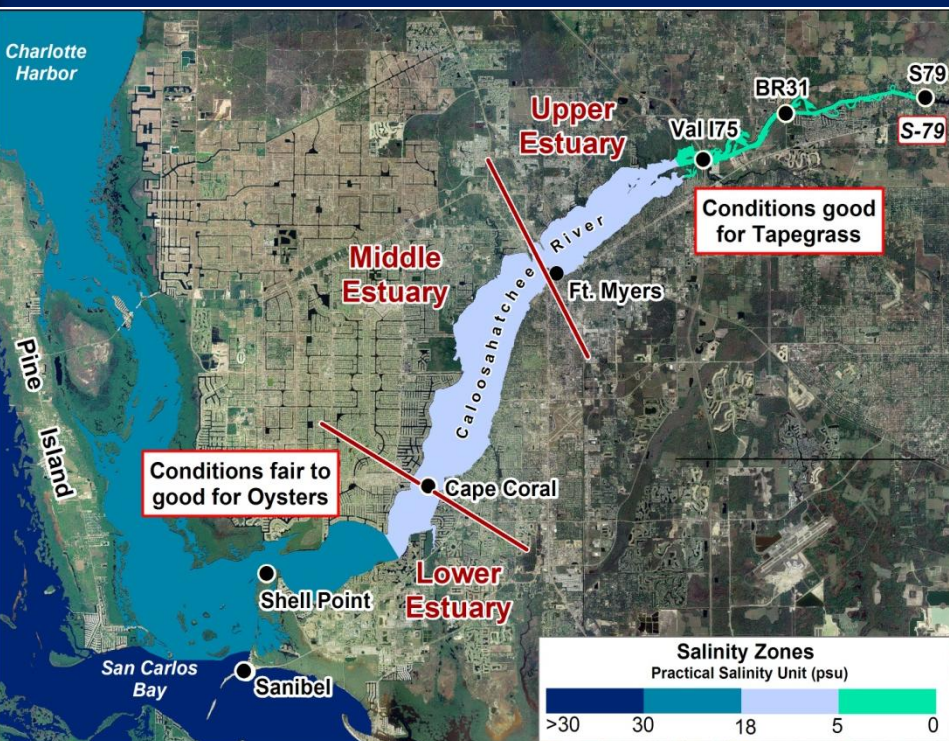


# Caloosahatchee Estuary

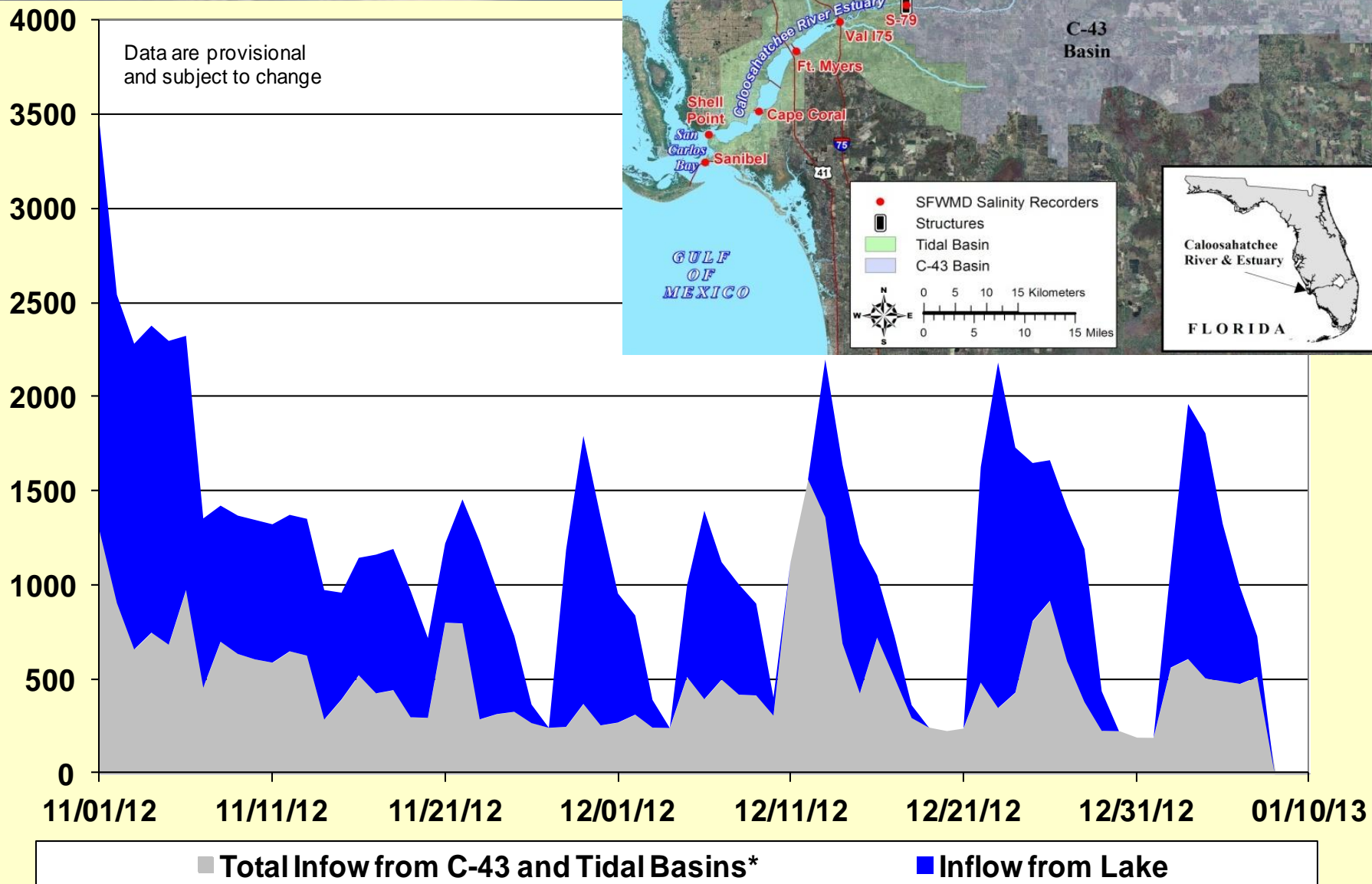
## Salinity Conditions

December 10, 2012

January 7, 2013



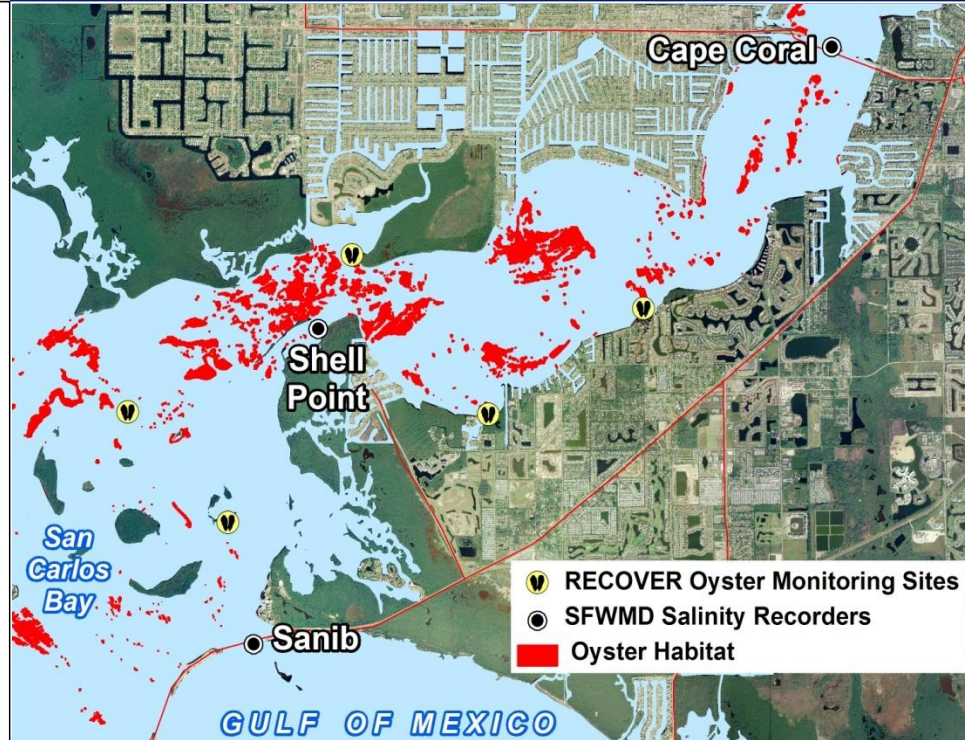
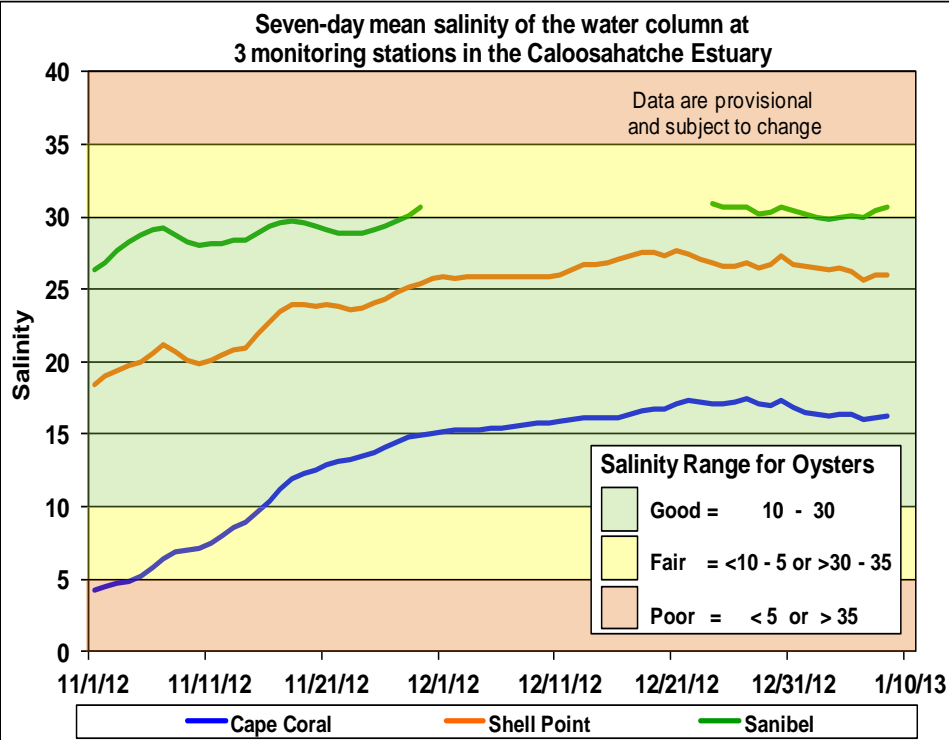
# Caloosahatchee Estuary



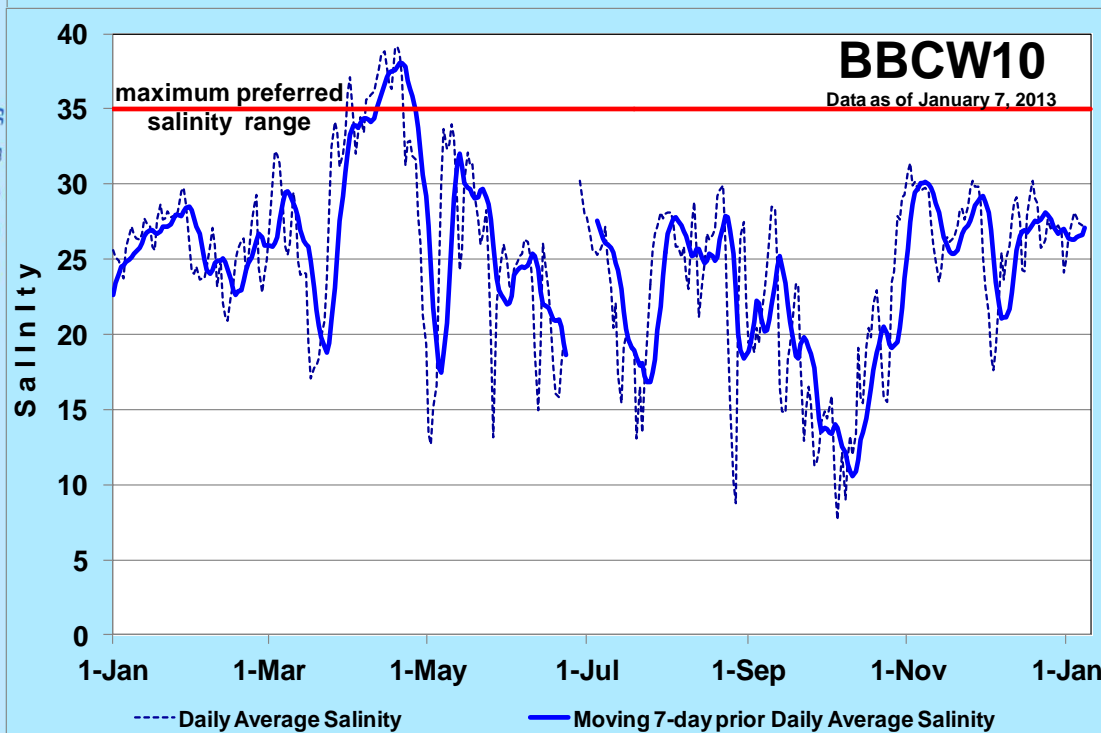
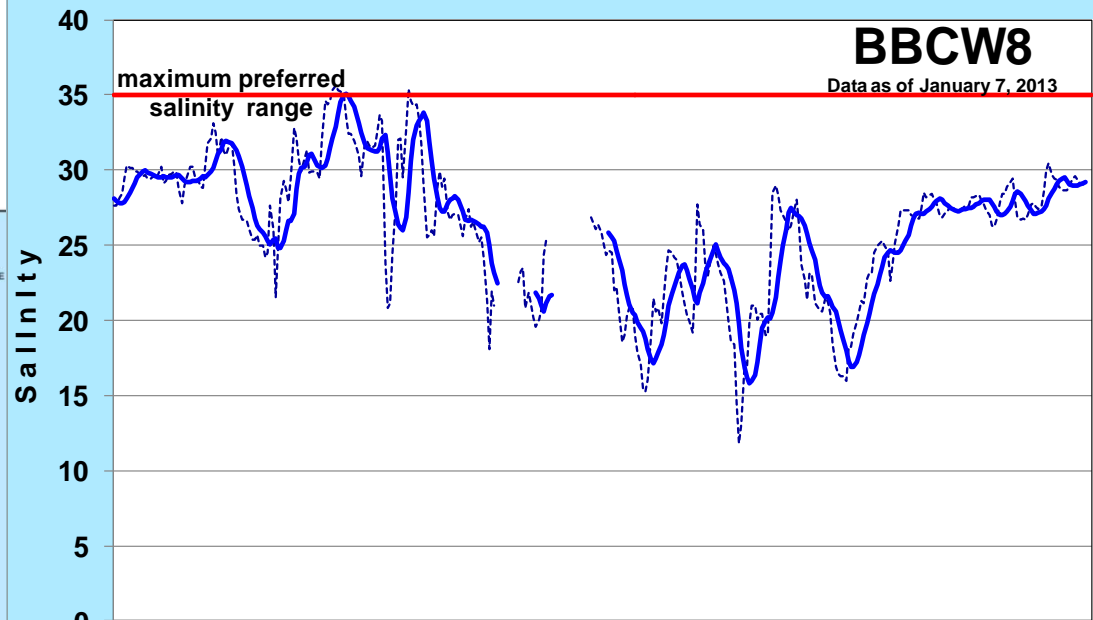
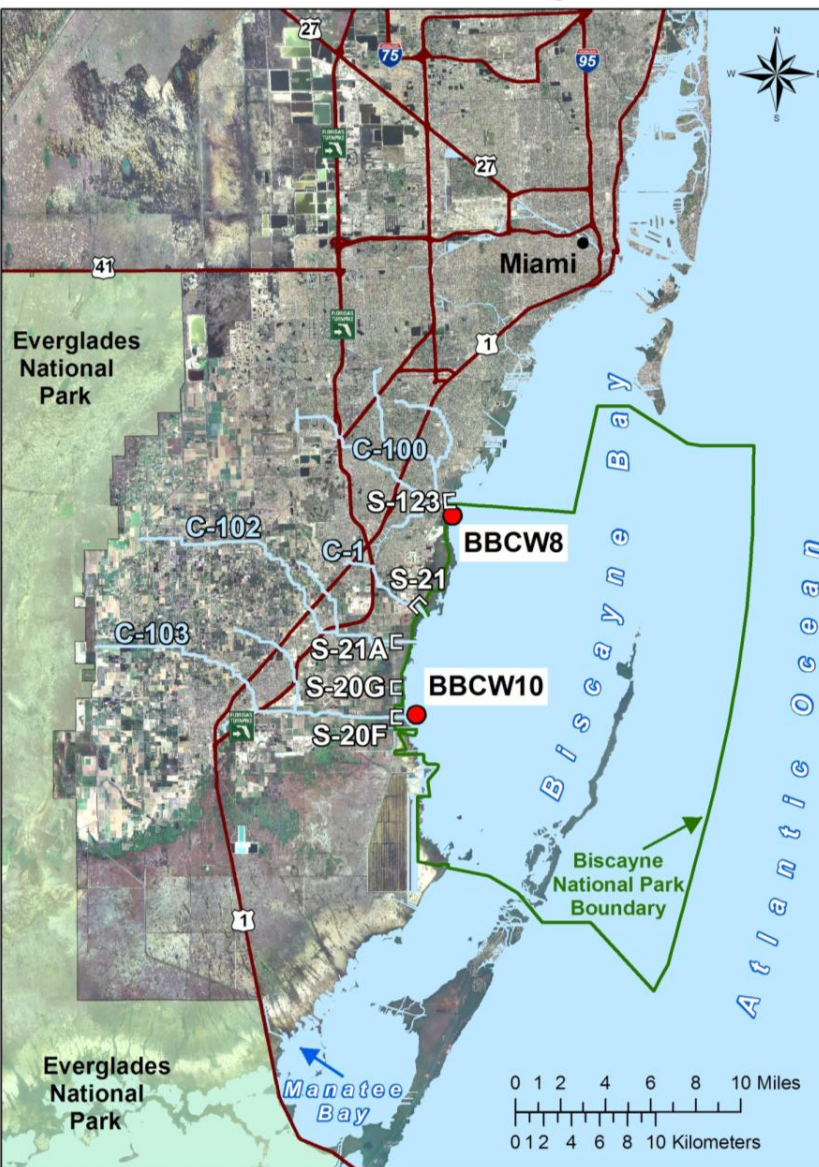


# Caloosahatchee Estuary

## Salinity Conditions

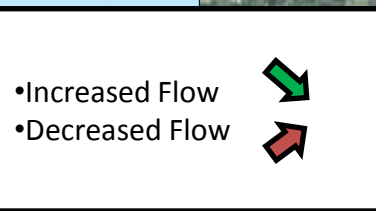
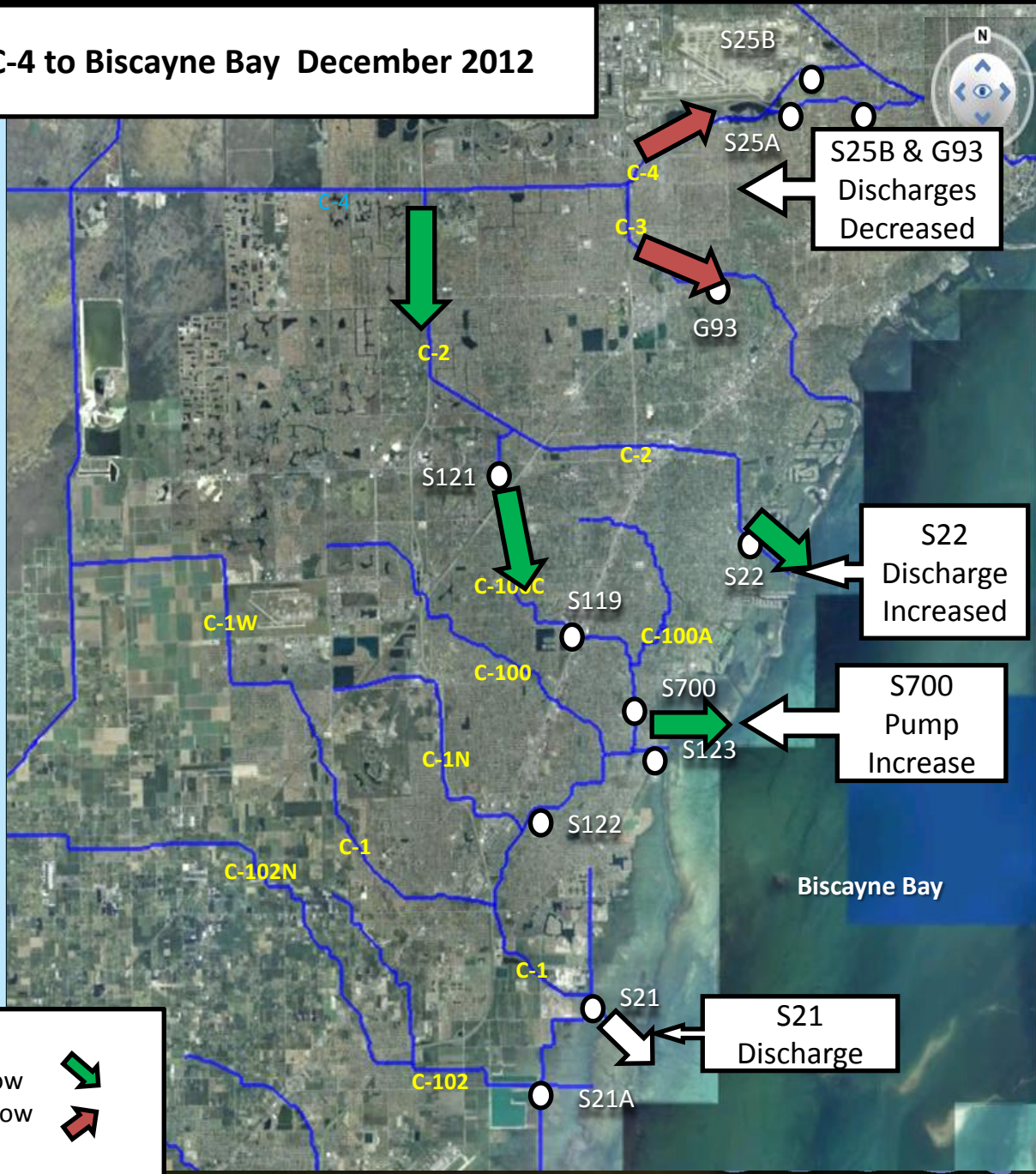
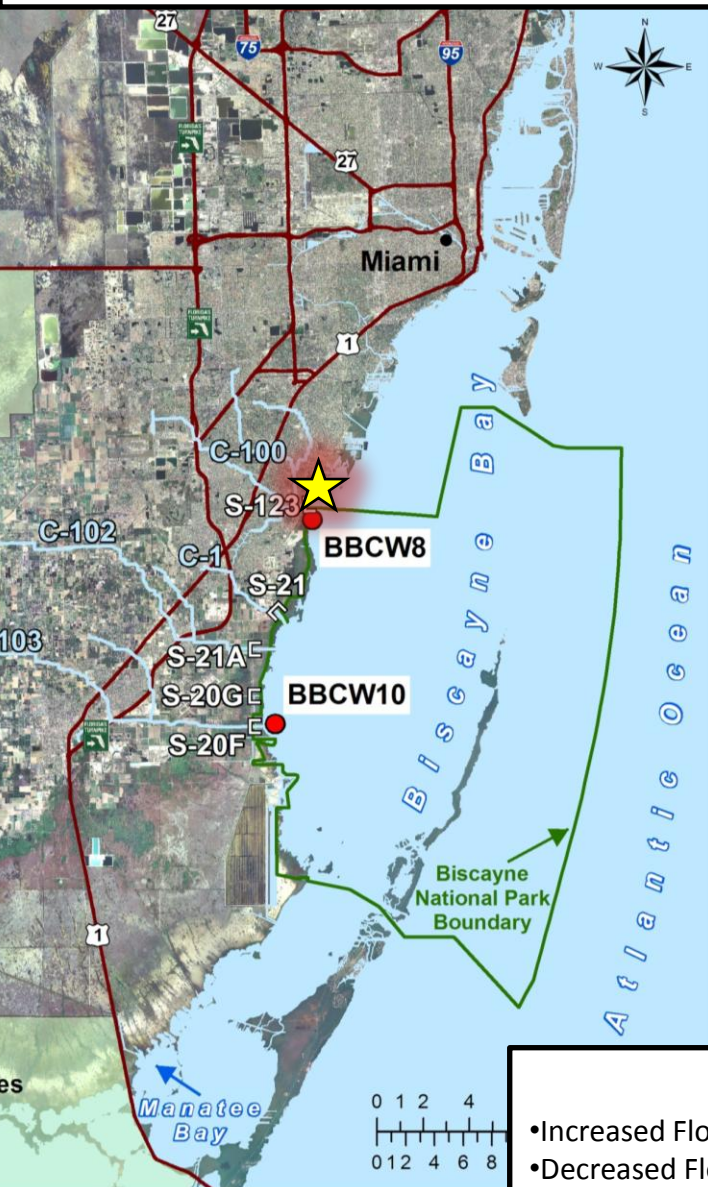


# Biscayne Bay Salinity





## Redirection of Flows from C-2/C-3, C-4 to Biscayne Bay December 2012



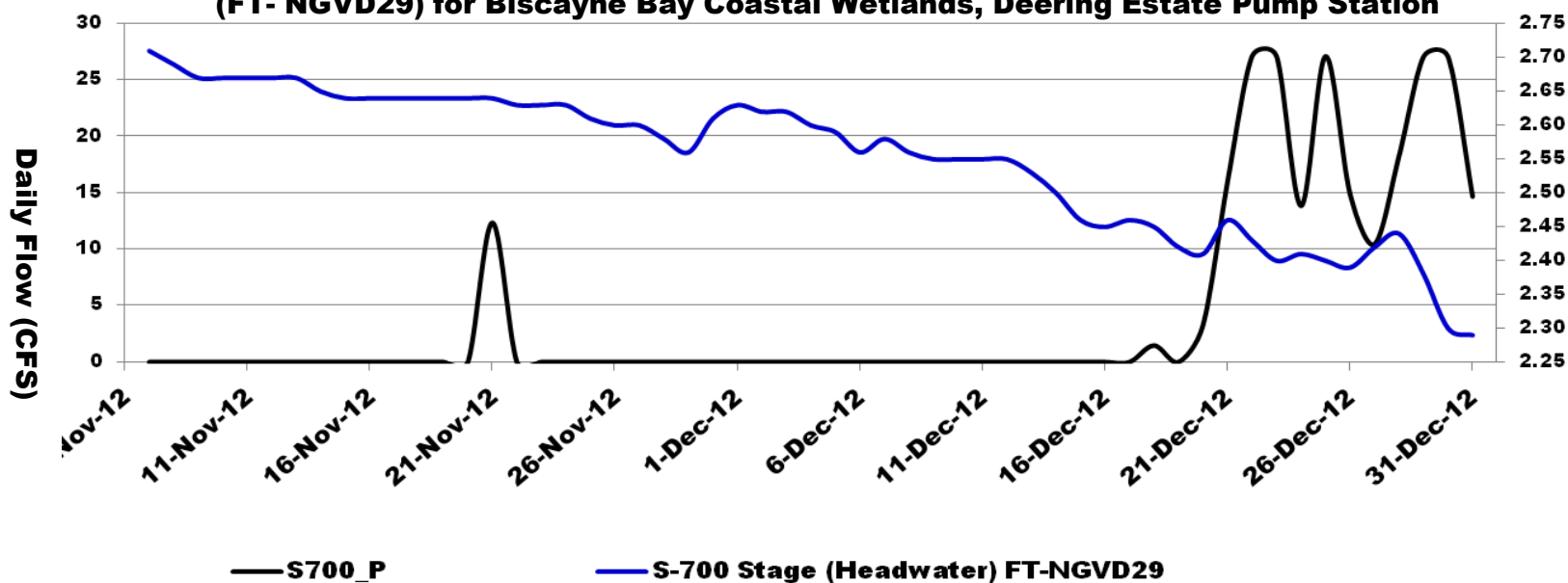


# Biscayne Bay

## Deering Pump Station (S-700)



Comparison of Daily Flow (CFS) and Stage Headwater (FT- NGVD29) for Biscayne Bay Coastal Wetlands, Deering Estate Pump Station

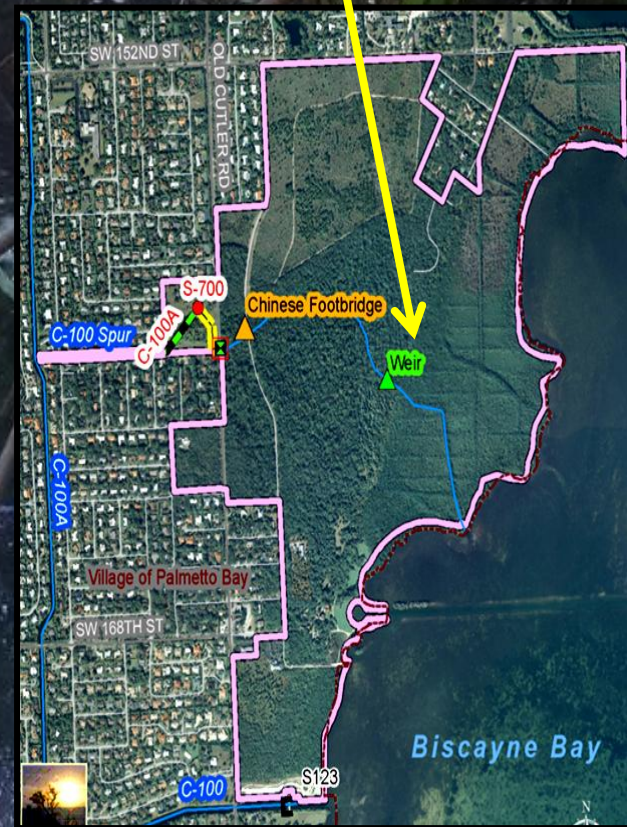


S-700 Stage (Headwater) FT-NGVD29



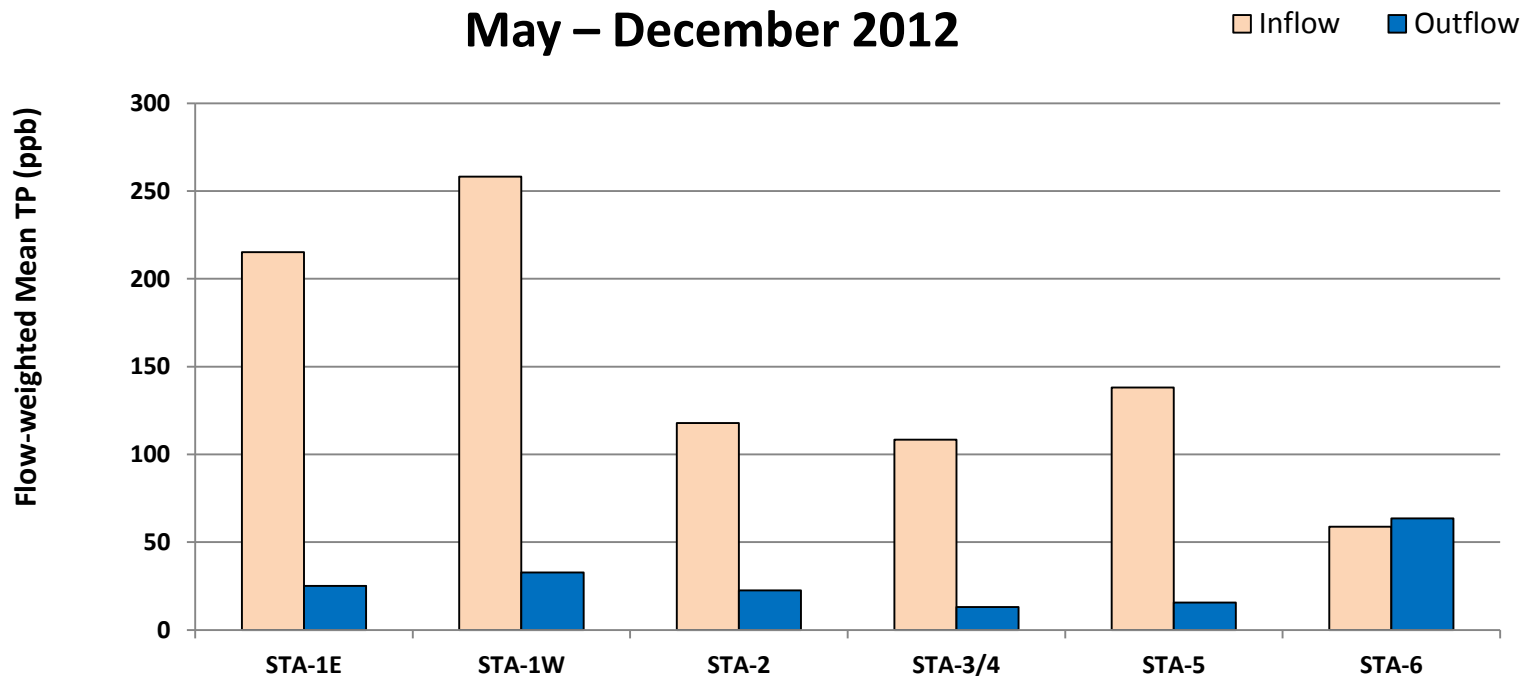
# Biscayne Bay

## Cutler Creek Weir



# Stormwater Treatment Areas Performance

- All operational treatment cells at target
- STA-1E Cell 6 water levels lowered to encourage Submerged Aquatic vegetation growth
- Bulrush plantings continue in STA-5





# STA-1W Phosphorus Mesocosm Study



- A three year proof-of-concept mesocosm study
- Investigate Total Phosphorus removal efficacy of dominant pristine Everglades vegetation (water lily and sawgrass) under a low P condition
- Utilizes STA-1W outflow as the inflow of the study
- Outflow TP of the water lily treatment recently averaged  $11.3 \pm 1.3$  ppb with a range from 9 to 13 ppb

# STA-5 Improvements

- Cell 1A Rehabilitation Activities
- Inflow canal dredging
- Reduced phosphorus and hydraulic loading
- Improved vegetation condition
- Reduced internal flux



*Bulrush plantings in open water areas*



*Substantial grading to improve hydraulics*

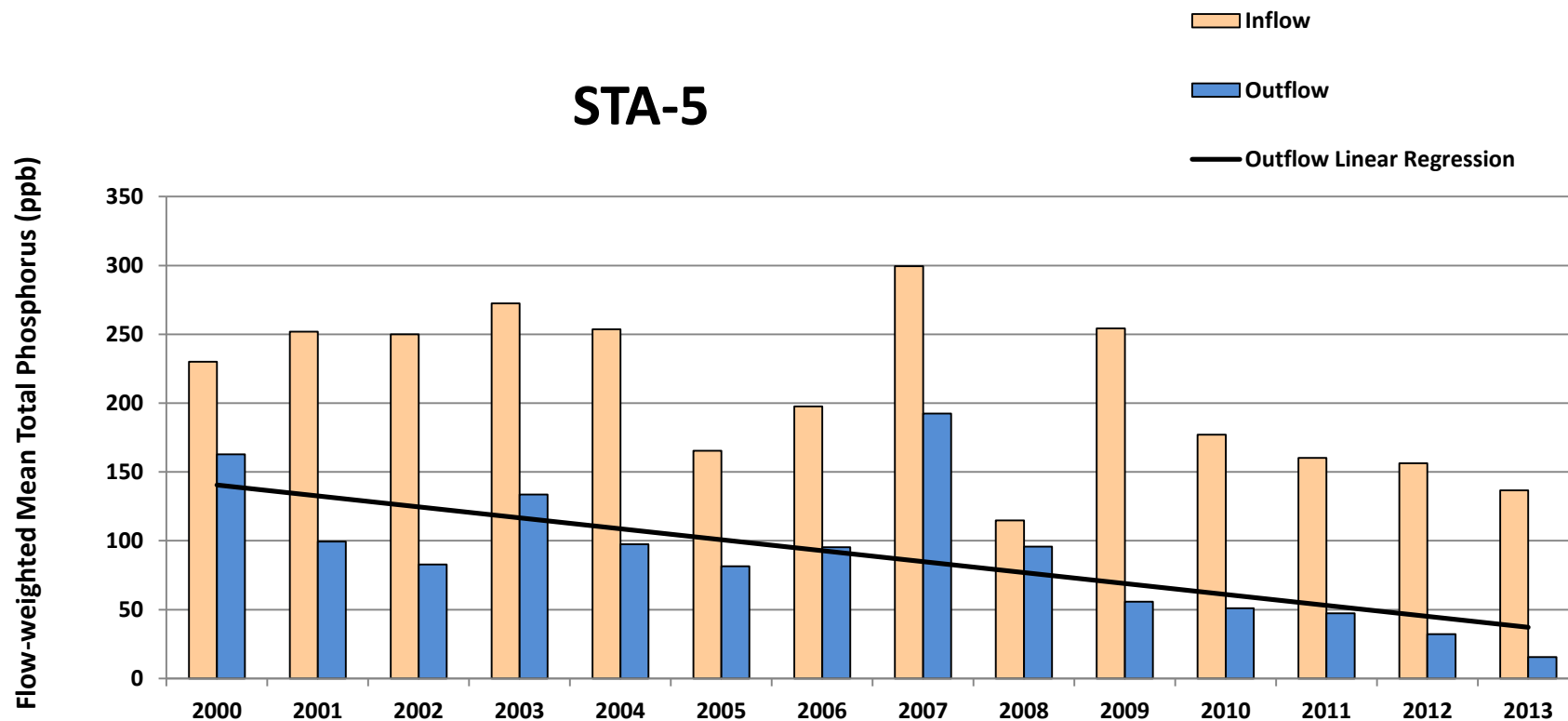




# STA-5 Flow-way 1 & 2

## Improved Outflow Performance

- Lowest Outflow concentration (16 ppb)



Graph contains preliminary data and partial WY13

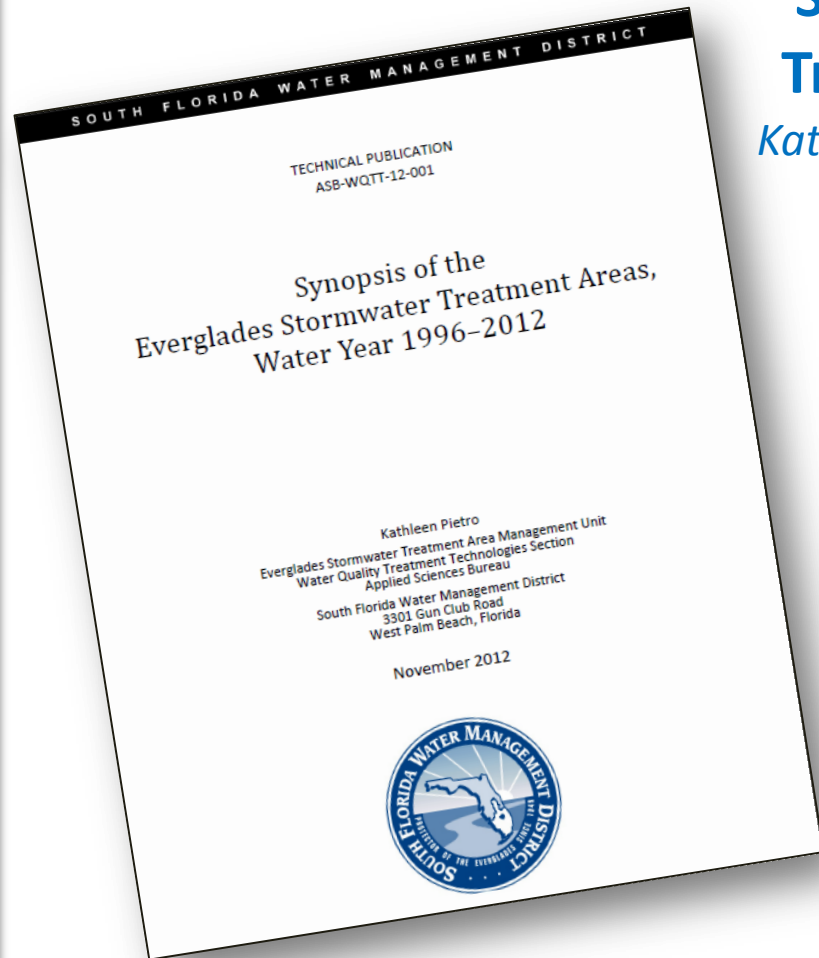
# STA Technical Publications

## Synopsis of the Everglades Stormwater Treatment Areas, Water Year 1996-2012

*Kathleen Pietro, Senior Scientist, Applied Sciences Bureau*

### Detailed overview of 16 years of STA performance

- **Timelines of major events**
  - Weather
  - Construction
  - Vegetation enhancements
- **Operating considerations**
- **Hydraulic/phosphorus loadings**
- **Phosphorus removal**





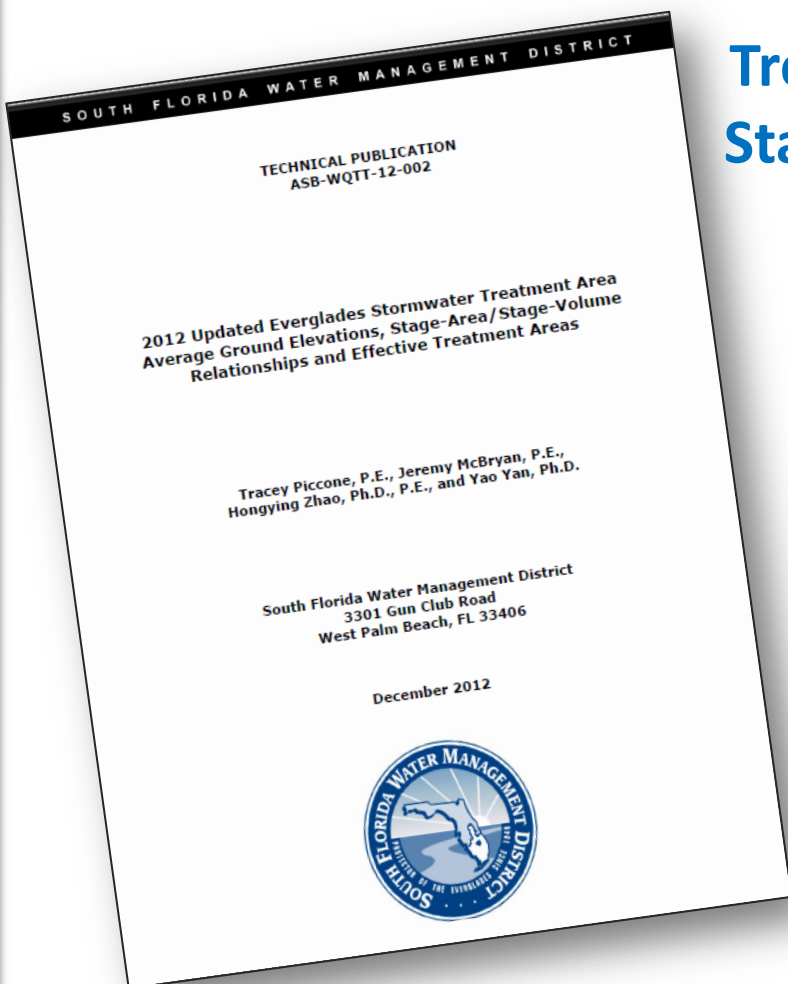
# STA Technical Publications

## 2012 Updated Everglades Stormwater Treatment Area Average Ground Elevations, Stage-Area/Stage-Volume Relationships and Effective Treatment Areas

*Tracey Piccone, P.E., Jeremy McBryan, P.E.,  
Hongying Zhao, Ph. D., P.E., and Yao Yan, Ph.D.*

### Updated Key STA Parameters:

- STA Effective Treatment Areas
- STA Topographic Survey Data
- STA Topographic Maps and Average Ground Elevations
- STA Stage-Area/Stage-Volume Relationships



# STA Recreation

## Hendry-Glades Audubon STA-5 Christmas Bird Count:

- 97 species (10 duck species)
- 82,000 birds
- 8 bald eagles
- 16 snail kites

199 confirmed species since 2005



Hendry-Glades Audubon leads STA-5 trips

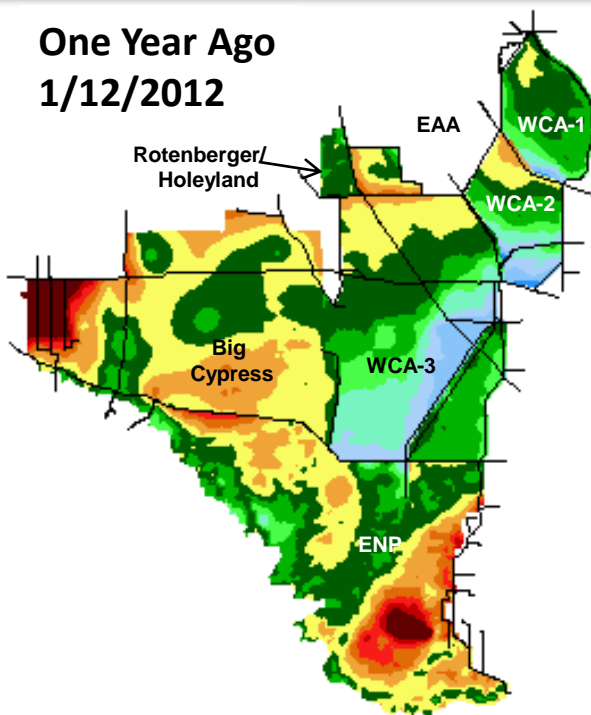


Audubon Society of Everglades leads STA-1E

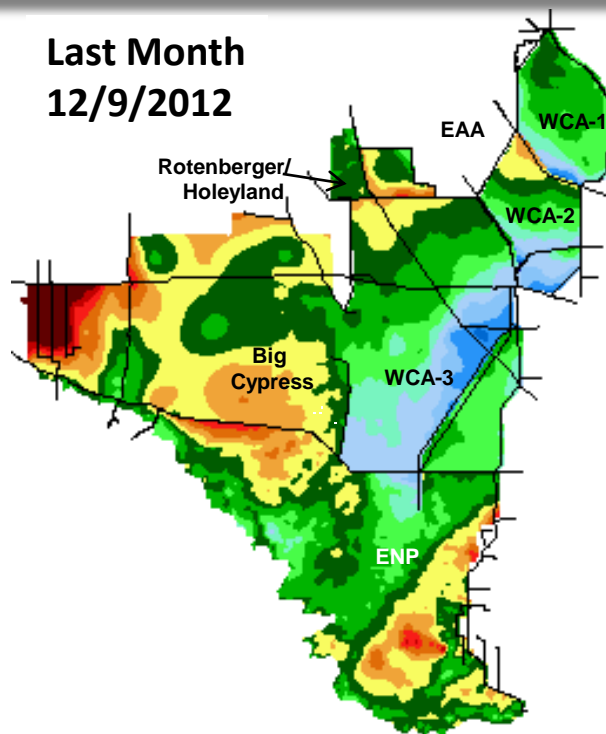


# Greater Everglades Water Depth Monthly Snapshots

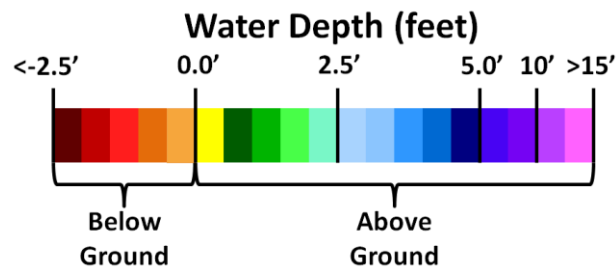
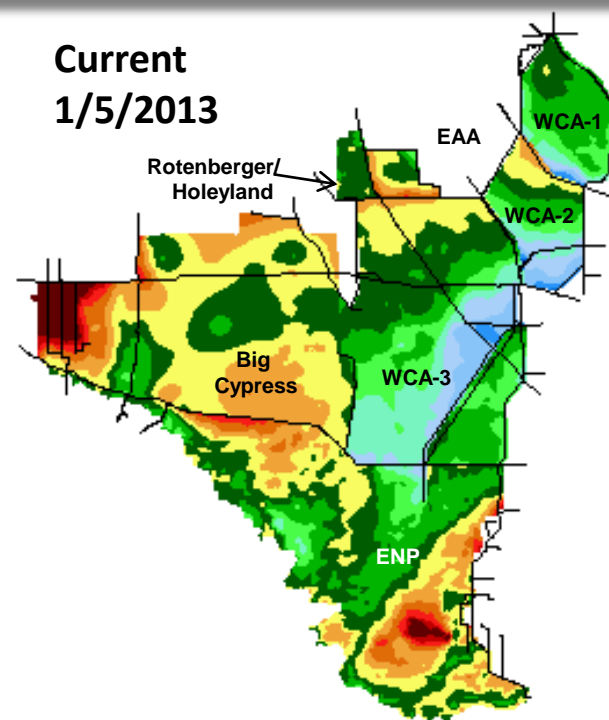
One Year Ago  
1/12/2012



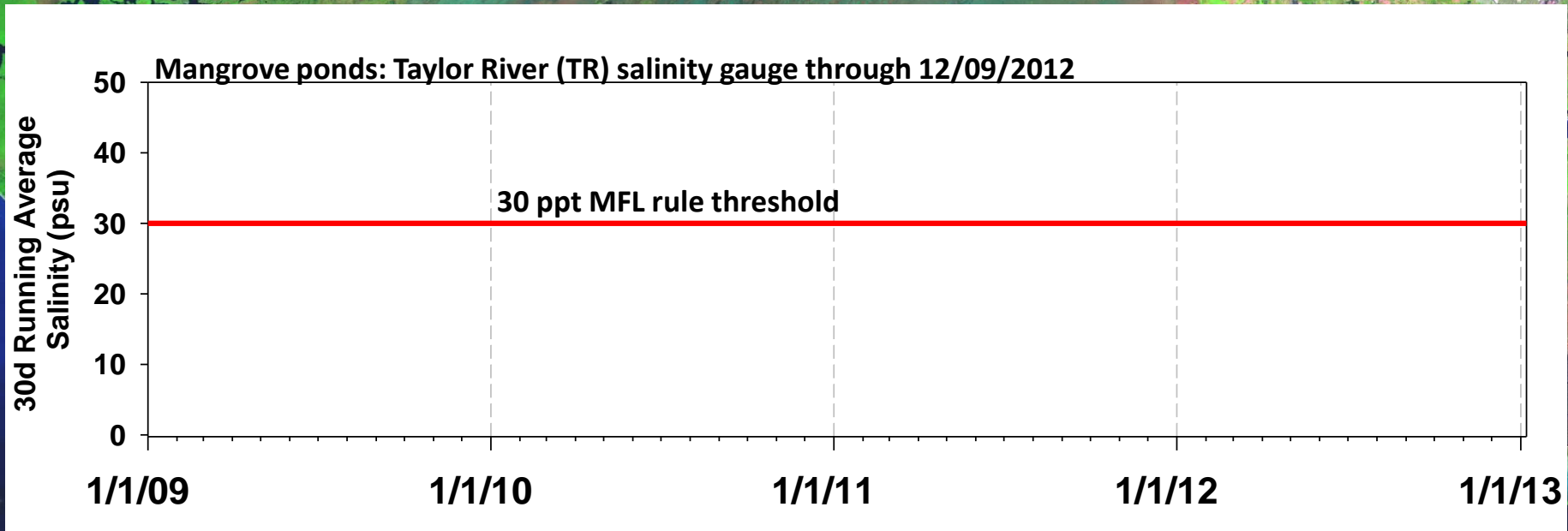
Last Month  
12/9/2012



Current  
1/5/2013



# Tracking Salinity in Florida Bay



Florida Bay MFL salinity threshold was exceeded in late June of 2011

TR

- ★ Salinity gauge
- ★ Creek flow gauge



# Thanks!



Palm Warbler, S9  
*Photo – Karen Donnelly*